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| IN RE APPLICATION OF | : |
| JACKY JOACHIM, ET AL. | : EXAMINER: GRAY, JILL M |
| SERIAL NO: 09/786,113 | : |
| FILED: JUNE 4, 2001 | : GROUP ART UNIT: 1774 |
| FOR: METHOD FOR MAKING A FIBROUS INSULATING PRODUCT, SIZING STUFF AND COMPOSITION | : |

# APPEAL BRIEF

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

This is an appeal of the Final Rejection dated October 20, 2004 of Claims 1, 2, 5-19 and 21-35.[1] A Notice of Appeal, along with a petition for a three-month extension of time, was timely filed on April 19, 2005.

## I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Isover Saint-Gobain having an address Les Miroirs 18, Avenue D'Alsace, F-92400 Courbevoie, France.

[1] While the Examiner states at the bottom of page 8 of the Final rejection that no claims are allowed, there is no rejection of Claim 21.

## II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representative and the assignee are aware of no appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

## III. STATUS OF THE CLAIMS

Claims 1, 2, 5-19 and 21-35, all the claims in the application, stand rejected and are herein appealed.

## IV. STATUS OF THE AMENDMENTS

No amendment under 37 CFR 1.116 has been filed.

## V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Claim 1

Independent Claim 1 recites a method of improving the mechanical strength after ageing of an insulation product comprising mineral wool, comprising:

melting a glass or rock mineral composition,

fiberizing the molten glass or mineral composition into filaments to form a mineral wool,

applying a size comprising a thermosetting resin to the mineral wool which has just been formed,

simultaneously or sequentially applying a hydrophilic latex to the mineral wool, then taking up the sized mineral wool in the form of a web, and then

thermally curing the size,

wherein the hydrophilic latex comprises a dispersion or emulsion of homopolymer or copolymer prepared from one or more monomers each having at least one hydrophilic functional group selected from the group consisting of hydroxyl, carboxyl and ester, or

the hydrophilic latex comprises a dispersion or emulsion of a homopolymer or copolymer and a protective colloid having hydrophilic functional groups.

See the specification at page 1, lines 16-34; page 3, lines 24-31; page 4, lines 19-29; page 6, lines 3-15; page 9, lines 21-25; page 10, lines 16-19 and 35-37; and page 13, lines 1-23.

Claim 15

Independent Claim 15 recites an insulation product prepared by

melting a glass or rock mineral composition,

fiberizing the molten glass or mineral composition into filaments to form a mineral wool,

applying a size comprising a thermosetting resin to the mineral wool which has just been formed,

simultaneously or sequentially applying a hydrophilic latex to the mineral wool, then

taking up the sized mineral wool in the form of a web, and then

thermally curing the size,

wherein the hydrophilic latex comprises a dispersion or emulsion of homopolymer or copolymer prepared from one or more monomers each having at least one hydrophilic functional group selected from the group consisting of hydroxyl, carboxyl and ester, or

the hydrophilic latex comprises a dispersion or emulsion of a homopolymer or copolymer and a protective colloid having hydrophilic functional groups.

See the specification at the above cited locations in support of Claim 1.

Claim 21

Independent Claim 21 recites a sizing composition comprising a phenolic resin and a hydrophilic latex,

wherein the hydrophilic latex comprises a dispersion or emulsion of homopolymer or copolymer prepared from one or more monomers each having at least one hydrophilic functional group selected from the group consisting of hydroxyl, carboxyl and ester, or

the hydrophilic latex comprises a dispersion or emulsion of a homopolymer or copolymer and a protective colloid having hydrophilic functional groups.

See the specification at page 3, lines 29-31; page 4, lines 19-29; page 6, lines 3-15; and page 9, lines 21-23.

Claim 29

Independent Claim 29 recites a method of improving the mechanical strength after ageing of an insulation product comprising mineral wool, comprising:

melting a glass or rock mineral composition,

fiberizing the molten glass or mineral composition into filaments to form a mineral wool,

applying a size comprising a thermosetting resin to the mineral wool which has just been formed,

simultaneously or sequentially applying a hydrophilic latex to the mineral wool, then

taking up the sized mineral wool in the form of a web, and then

thermally curing the size,

wherein the mineral wool dissolves in a physiological medium and comprises 8 to 25% by weight of at least one alkali metal oxide.

See the specification at page 1, lines 16-34; page 3, lines 24-31; page 9, lines 21-25; page 10, lines 16-19 and 35-37; page 11, lines 11-15; and page 13, lines 1-23.

Claim 30

Independent Claim 30 recites an insulation product prepared by

melting a glass or rock mineral composition,

fiberizing the molten glass or mineral composition into filaments to form a mineral wool,

applying a size comprising a thermosetting resin to the mineral wool which has just been formed,

simultaneously or sequentially applying a hydrophilic latex to the mineral wool, then

taking up the sized mineral wool in the form of a web, and then

thermally curing the size,

wherein the mineral wool dissolves in a physiological medium and comprises 8 to 25% by weight of at least one alkali metal oxide.

See the specification at the above cited locations in support of Claim 29.

## VI. GROUNDS OF REJECTION

Ground (A)

Claims 15 and 19 stand rejected under 35 U.S.C. § 102(b) as anticipated by US 5,190,997 (Lindemann et al).

Ground (B)

Claims 1, 5-15, 19, 22-27 and 32 stand rejected under 35 U.S.C. § 103(a) as unpatentable over US 5,972,434 (Kajander) in view of Lindemann et al and US 5,872,067 (Meng et al).

Ground (C)

Claims 2, 16-17, 29-31 and 33-34 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kajander in view of Lindemann et al and Meng et al, and further in view of WO 95/31411 (WO '411).

Ground (D)

Claims 18, 28 and 35 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kajander in view of Lindemann et al and Meng et al, and further in view of WO 98/40437 (WO '437).

## VII. ARGUMENT

As a preface to discussion of the grounds of rejection, Applicants submit that it will be helpful to understand the nature of the present invention and the comparative data of record demonstrating the unexpected fruits thereof.

Applicants have discovered that when a particular hydrophilic latex, as recited in independent Claims 1 and 15, is applied with or sequentially to applying a thermosetting resin-based size to just-formed mineral wool, and prior to thermally curing the size, formation of an insulation product can be produced, having improved mechanical strength after ageing, and particularly after ageing in a wet medium, compared to corresponding products in which such a latex has not been added.

Applicants have further discovered that when a hydrophilic latex, without limitation, as recited in independent Claims 29 and 30, is applied as discussed above, where the mineral wool dissolves in a physiological medium and comprises 8 to 25% by weight of at least one alkali metal oxide, similar results are obtained.

A particularly effective sizing composition, as recited in independent Claim 21, comprises the above particular hydrophilic latex and a phenolic resin.

As described in the specification in the paragraph bridging pages 3 and 4, while the addition of the latex to the size did not modify, or modified only slightly, the mechanical

properties, or even degraded these properties right after manufacture, it was possible to achieve a remarkable reduction in the loss of such properties after ageing, such as in a wet medium. (In some cases, properties were improved.) Applicants further describe at page 4, lines 30-35 of the specification, that this result is surprising since it might be thought that a hydrophilic latex, by increasing the amount of water picked up by the product, would accelerate the loss of properties due to the wet medium, particularly in the case of products based on a so-called biosoluble mineral wool. Applicants continue, at the paragraph bridging pages 4 and 5, that without wishing to be bound by any scientific theory, it is possible that the hydrophilic character of the dispersed polymer phase of the latex gives the latter an advantageous affinity towards the mineral material forming the wool, possibly because of the formation of polar bonds, making the latex act, as it were, as an adhesion primer for the resin. This is because it was found, in comparatives tests of the tear strength of the resin, that the prior application of a hydrophilic latex to the mineral wool gives greater adhesion of the resin of the size to the surface of the mineral material.

Such comparative tests can be found in the specification between the use of no latex, and latex (in amounts of the order of 1 to 2%) according to the present invention. Tests were performed, as described in the specification beginning at page 13, line 1, wherein immersion water uptake, friability, puncture strength, tear strength, and compressive strength were measured. Each of Examples 1-12 (which individually are drawn to various combinations of mineral wool, thermosetting resin and hydrophilic latex) contains data from such comparative tests, the results shown in Tables 1-5 in the specification, beginning at page 17 and ending at page 24. As the data in these tables show, the above-discussed properties, after ageing, were

demonstrably superior with the present invention compared to comparative products made without the addition of any latex.

In none of the rejections of record has the Examiner even commented on the above-discussed comparative data.

Ground (A)

Claims 15 and 19 stand rejected under 35 U.S.C. § 102(b) as anticipated by Lindemann et al. That rejection is untenable and should not be sustained.

Lindemann et al discloses an adhesive composition containing an aqueous copolymer emulsion which contains a first polymer network which is intertwined on a molecular scale with a second polymer network (Abstract), which polymer emulsion is disclosed as useful as a binder of fibers of fabrics, especially fiberfill (column 1, lines 14-21). Lindemann et al discloses myriad uses for their adhesive composition, such as in the manufacture of glass fiber mats (column 2, line 3ff). Lindemann et al is concerned that fiberfill products, which rely on a particular loft value, which acts to impart insulation, be maintained, and therefore, it is necessary to select a binder which achieves this end. However, Lindemann et al is not limited to insulation products and indeed, as discussed below, the only example drawn to the use of glass fiber mats is not an insulation product. Lindemann et al discloses further that their polymer emulsion binders can also contain thermosetting resins (column 10, line 61ff).

The Examiner has apparently combined the disparate disclosures of insulation, glass fibers, thermosetting resins, and the inventive polymer emulsion product therein, to find that the claimed invention herein is anticipated, as if the invention was the completion of a jig-

saw puzzle. This approach is incorrect. Compare *In re Arkley*, 455 F.2d 586, 590, 172 USPQ 524, 526 (CCPA 1972):

> [R]ejections under 35 U.S.C. 102 are proper only when the claimed subject matter is identically disclosed or described in "the prior art." Thus, for the instant rejection under 35 U.S.C. [102(b)] to have been proper, the . . . reference must clearly and unequivocally disclose the claimed [subject matter] or direct those skilled in the art to the [subject matter] without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited reference. Such picking and choosing may be entirely proper in the making of a 103, obviousness rejection, where the applicant must be afforded an opportunity to rebut with objective evidence any inference of obviousness which may arise from the similarity of the subject matter which he claims to the prior art, but it has no place in the making of a 102, anticipation rejection.

As alluded to above, the only example in Lindemann et al drawn to a glass fiber-containing product is Example 13, wherein a glass fiber mat without a binder is prepared by treating a polyester scrim fabric with silicone release coating and catalyst which is then cured, placing the scrim in a paper hand sheet former, closing the unit, then separately preparing a fiberglass slurry, formed of fibers 1.25 inches long, i.e., chopped glass fibers (whose length is necessarily reduced during the manufacture of the mat due to the mixing steps 2) and 6)) in water, adding water and polyoxyethylated alkylamine, further diluting the fiberglass slurry, and dropping the diluted slurry through the scrim which forms an unbonded fiber mat. Subsequently, the unbonded glass fiber sandwiched between layers of scrim is immersed in the aqueous bonding solution made from urea-formaldehyde (U-F) binder, the mat is then removed and dried, and the scrim material is peeled away (column 23, line 50 through column 24, line 64).

Lindemann et al discloses improvement of dry and wet tensile and the tear strength of the glass fiber mat by the addition of thermoplastic copolymers to the U-F resin (column 25, lines 36-38), but is silent to the process steps of the present invention.

A binder, as used in Lindemann et al, is different from a size, as that term is used herein and as it would be understood by persons skilled in the art. Lindemann et al discloses that a *binder* refers to a composition which is applied on the fibers once they are formed, as a post-treatment step, whereas a *size* refers to a composition which is applied on the filaments during (or immediately thereafter) the formation of a mineral wool. Furthermore, a product, i.e., the present invention, wherein the filaments have been uniformly applied with a sizing composition comprising a hydrophilic latex prior to any shaping operation will inevitably possess different characteristics when compared to a product where a binder is applied to a preformed glass fiber held together by scrims, wherein the scrim is subsequently removed, as disclosed by Lindemann et al.

Nor does Lindemann et al disclose hydrophilic latices of the type recited in the present claims. Among the applicable monomers described for Lindemann et al's emulsion (paragraph bridging columns 5 and 6), there is no requirement that the monomers contain hydrophilic functional groups. Nor are the presently-recited hydrophilic latices an aqueous copolymer emulsion which contains a first polymer network which is intertwined on a molecular scale with a second polymer network.

For all the above reasons, it is respectfully requested that this rejection be REVERSED.

Ground (B)

Claims 1, 5-15, 19, 22-27 and 32 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kajander in view of Lindemann et al and Meng et al. That rejection is untenable and should not be sustained.

Kajander discloses fire-resistant glass fiber products, in which glass fiber, either individually or in the form of a fiber bundle, a nonwoven mat or a blanket of intermingled fibers is treated with a binder comprising a nitrogen containing compound and a boron containing compound wherein, when exposed to high temperatures, such as when encountered in a fire, the nitrogen containing compound will decompose to release nitrogen at a temperature below the softening point of the glass fiber, which nitrogen reacts with boron or boron oxide to form a sheath of refractory material around the fibers to protect them (Abstract). Particularly, Kajander discloses that in the known processes of making fiberglass insulation products, fine glass fiber is first formed from a melt by rotary fiberization, flame attenuation, etc., and then sprayed with an aqueous solution of a binder, typically phenol formaldehyde with urea or melamine extension (modification or fortification), melamine formaldehyde, or urea formaldehyde; the wetted fibers are then collected in a blanket on a permeable surface, compressed slightly or molded, dried and cured to form various fiberglass insulation products (column 12, line 31ff). In the embodiment apparently relied on by the Examiner, glass fiber is coated with an aqueous sizing containing a soluble or partly soluble boron compound, such as boric acid and a "conventional film former" that will retain the boric acid on the surface of the wet fiber when it is used in a wet laid nonwoven process described therein, after which a nitrogen containing binder is applied to the boron compound nonwoven glass fiber mat in the conventional manner and dried and cured to form a fire resistant nonwoven mat (column 12, lines 21-30). The Examiner finds that the above-described aqueous solution of a binder is, in effect, the presently-recited hydrophilic latex. However, it is clear that the aqueous solution of a binder described in Kajander is an aqueous solution of a thermosetting resin. It appears that the Examiner has analogized two completely

different techniques; one, the wet laid nonwoven process described at column 12, lines 21-30, and two, the process of making fiberglass insulation products described at column 12, lines 32-53.

In sum, Kajander neither discloses nor suggests, nor recognizes any of the benefits of, the addition of the presently-recited hydrophilic latex during sizing of the mineral wool and before thermally curing the size.

Neither Lindemann et al nor Meng et al remedy the above-discussed deficiencies of Kajander. Lindemann et al and its deficiencies have been discussed above. The Examiner relies on Meng et al's disclosure of glass fiber mats in which glass fibers are sized with sizing compositions comprising one or more polymeric film forming materials which are compatible with the thermoplastic matrix material described by Meng et al, non-limiting examples including thermoplastic material, thermosetting materials and mixtures thereof (column 6, lines 60-65). Meng et al, however, is essentially irrelevant herein, because the glass fibers are present to reinforce a polymeric matrix for ultimate formation of a composite thereof, as opposed to forming, for example, a blanket of intermingled fibers such as disclosed by Kajander.

Without the present disclosure as a guide, one skilled in the art would not have combined Kajander, Lindemann et al and Meng et al. Nevertheless, even if combined, the result would not be the presently-claimed invention. Moreover, even if the combination were *prima facie* obvious, and Applicants submit that it is not so *prima facie* obvious, the above-discussed comparative data rebuts any such case.

For all the above reasons, it is respectfully requested that this rejection be REVERSED.

Ground (C)

Claims 2, 16-17, 29-31 and 33-34 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kajander in view of Lindemann et al and Meng et al, and further in view of WO '411. That rejection is untenable and should not be sustained.

The disclosures and deficiencies of Kajander, Lindemann et al and Meng et al have been discussed above. WO '411 does not remedy these deficiencies. WO '411 has been relied on for its disclosure of biologically degradable mineral-fiber compositions. However, if such a composition were used in the composition resulting from the combination of Kajander, Lindemann et al and Meng et al, the result would still not be the presently-claimed invention. In addition, the above-discussed combination of prior art could not have predicted the above-discussed superior results obtained, especially with the mineral wool having the properties recited in the present claims.

For all the above reasons, it is respectfully requested that this rejection be REVERSED.

Ground (D)

Claims 18, 28 and 35 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kajander in view of Lindemann et al and Meng et al, and further in view of WO '437. That rejection is untenable and should not be sustained.

The disclosures and deficiencies of Kanjander, Lindemann et al and Meng et al have been discussed above. WO '437 does not remedy these deficiencies. The Examiner relies on WO '437 for a disclosure of mineral wool density. However, if such a composition were used in the composition resulting from the combination of Kajander, Lindemann et al and

Meng et al, the result would still not be the presently-claimed invention. In addition, the above-discussed combination of prior art could not have predicted the above-discussed superior results obtained.

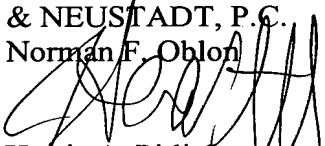
For all the above reasons, it is respectfully requested that this rejection be REVERSED.

## VIII. CONCLUSION

For the above reasons, it is respectfully requested that all the rejections still pending in the Final Office Action be REVERSED.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
& NEUSTADT, P.C.
Norman F. Oblon



Harris A. Pitlick
Registration No. 38,779

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)

NFO:HAP

## CLAIMS APPENDIX

Claim 1: A method of improving the mechanical strength after ageing of an insulation product comprising mineral wool, comprising:

melting a glass or rock mineral composition,

fiberizing the molten glass or mineral composition into filaments to form a mineral wool,

applying a size comprising a thermosetting resin to the mineral wool which has just been formed,

simultaneously or sequentially applying a hydrophilic latex to the mineral wool, then

taking up the sized mineral wool in the form of a web, and then

thermally curing the size,

wherein the hydrophilic latex comprises a dispersion or emulsion of homopolymer or copolymer prepared from one or more monomers each having at least one hydrophilic functional group selected from the group consisting of hydroxyl, carboxyl and ester, or

the hydrophilic latex comprises a dispersion or emulsion of a homopolymer or copolymer and a protective colloid having hydrophilic functional groups.

Claim 2: The method according to Claim 1, wherein the mineral wool dissolves in a physiological medium.

Claim 5: The method according to Claim 1, wherein the homopolymer or copolymer is selected from the group consisting of vinyl polymers, vinyl acetate homopolymers or copolymers, acrylic polymers and carboxylic acid containing polymers.

Claim 6: The method according to Claim 5, wherein the homopolymer or copolymer is selected from the group consisting of a polyvinyl acetate homopolymer, a vinyl acetate/ (meth) acrylic acid or ester copolymer, a vinyl acetate/maleic ester copolymer, a vinyl acetate/olefin copolymer, a vinyl acetate/vinyl chloride copolymer, a silanized acrylonitrile/acrylic ester, and a silanized styrene/acrylic acid or ester copolymer.

Claim 7: The method according to Claim 1, wherein the latex is an aqueous dispersion or emulsion of a homopolymer or copolymer and a protective colloid having hydrophilic functional groups.

Claim 8: The method according to Claim 7, wherein the latex comprises a copolymer and a protective colloid, and the copolymer is selected from the group consisting of a silanized or non-silanized vinyl chloride/ethylene copolymer and a silanized or non-silanized vinyl chloride/vinyl laurate/ethylene terpolymer.

Claim 9: The method according to Claim 1, wherein the latex further comprises a water-repellent agent.

Claim 10: The method according to Claim 1, wherein the homopolymer or copolymer has a glass transition temperature $T_g$ of less than 80°C.

Claim 11: The method according to Claim 1, wherein the homopolymer or copolymer has a glass transition temperature $T_g$ of greater than -5°C.

Claim 12: The method according to Claim 1, wherein after said curing, the solids content of the hydrophilic latex is less than 5% by weight with respect to the weight of mineral wool.

Claim 13: The method according to Claim 1, wherein the hydrophilic latex is mixed with the size before application to the mineral wool.

Claim 14: The method according to Claim 1, wherein the hydrophilic latex is applied to the mineral wool separately from the size.

Claim 15: An insulation product prepared by

melting a glass or rock mineral composition,

fiberizing the molten glass or mineral composition into filaments to form a mineral wool,

applying a size comprising a thermosetting resin to the mineral wool which has just been formed,

simultaneously or sequentially applying a hydrophilic latex to the mineral wool, then

taking up the sized mineral wool in the form of a web, and then

thermally curing the size,

wherein the hydrophilic latex comprises a dispersion or emulsion of homopolymer or copolymer prepared from one or more monomers each having at least one hydrophilic functional group selected from the group consisting of hydroxyl, carboxyl and ester, or

the hydrophilic latex comprises a dispersion or emulsion of a homopolymer or copolymer and a protective colloid having hydrophilic functional groups.

Claim 16: The insulation product according to Claim 15, wherein the mineral wool comprises glass or rock wool which dissolves in a physiological medium.

Claim 17: The insulation product according to Claim 16, wherein the mineral wool dissolves in a saline solution simulating a physiological medium at a rate of at least 30 $ng/cm^2$ per hour, measured at pH 4.5, and at a rate of at least 30 $ng/cm^2$ per hour, measured at pH 7.5.

Claim 18: The insulation product according to Claim 15, wherein the insulation product has a density of at least 30 $kg/m^3$.

Claim 19: The insulation product of Claim 15, wherein the insulation product is a thermal and/or acoustic insulation product.

Claim 21: A sizing composition comprising a phenolic resin and a hydrophilic latex, wherein the hydrophilic latex comprises a dispersion or emulsion of homopolymer or copolymer prepared from one or more monomers each having at least one hydrophilic functional group selected from the group consisting of hydroxyl, carboxyl and ester, or the hydrophilic latex comprises a dispersion or emulsion of a homopolymer or copolymer and a protective colloid having hydrophilic functional groups.

Claim 22: The method of Claim 9, wherein the water repellent agent is a silicone or a fluorinated compound.

Claim 23: The method of Claim 10, wherein the homopolymer or copolymer has a glass transition temperature $T_g$ of less than 50°C.

Claim 24: The method of Claim 11, wherein the homopolymer or copolymer has a glass transition temperature $T_g$ of greater than 0°C.

Claim 25: The method of Claim 12, wherein the solids content of the hydrophilic latex is about 0.01 to 5% by weight with respect to the weight of the mineral wool.

Claim 26: The method of Claim 1, wherein the thermosetting resin is a phenolic resin.

Claim 27: The insulation product of Claim 15, wherein the thermosetting resin is a phenolic resin.

Claim 28: The insulation product of Claim 18, wherein the density is at least 80 $kg/m^3$.

Claim 29: A method of improving the mechanical strength after ageing of an insulation product comprising mineral wool, comprising:

melting a glass or rock mineral composition,

fiberizing the molten glass or mineral composition into filaments to form a mineral wool,

applying a size comprising a thermosetting resin to the mineral wool which has just been formed,

simultaneously or sequentially applying a hydrophilic latex to the mineral wool, then

taking up the sized mineral wool in the form of a web, and then

thermally curing the size,

wherein the mineral wool dissolves in a physiological medium and comprises 8 to 25% by weight of at least one alkali metal oxide.

Claim 30: An insulation product prepared by

melting a glass or rock mineral composition,

fiberizing the molten glass or mineral composition into filaments to form a mineral wool,

applying a size comprising a thermosetting resin to the mineral wool which has just been formed,

simultaneously or sequentially applying a hydrophilic latex to the mineral wool, then

taking up the sized mineral wool in the form of a web, and then

thermally curing the size,

wherein the mineral wool dissolves in a physiological medium and comprises 8 to 25% by weight of at least one alkali metal oxide.

Claim 31: The method of Claim 2, wherein the mineral wool comprises 8 to 25% by weight of at least one alkali metal oxide.

Claim 32: The method of Claim 7, wherein the protective colloid comprises polyvinyl alcohol or cellulose.

Claim 33: The insulation product of Claim 17, wherein the mineral wool dissolves in a saline solution simulating a physiological medium at a rate of at least 40 ng/cm$^2$ per hour, measured at pH 4.5, and at a rate of at least 40 ng/cm$^2$ per hour, measured at pH 7.5.

Claim 34: The insulation product of Claim 17, wherein the mineral wool dissolves in a saline solution simulating a physiological medium at a rate of at least 50 ng/cm$^2$ per hour, measured at pH 4.5, and at a rate of at least 50 ng/cm$^2$ per hour, measured at pH 7.5.

Claim 35: The insulation product according to Claim 15, wherein the insulation product has a density of at least 50 kg/m$^3$.

## EVIDENCE APPENDIX

None.

## RELATED PROCEEDINGS APPENDIX

None.